# PATENT SPECIFICATION

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Complete Accepted: Aug. 27, 1931.

COMPLETE SPECIFICATION.

## Means whereby an Internal Combustion Engine may be used Either as a Side-by-side Valve Engine or as an Overhead-valve Engine.

We, ROBERT JOHN GREENSLADE, ROBERT GEORGE GREENSLADE and ALFRED JOHN GREENSLADE, all British Subjects, and all of 14, Bond Street, Swansea, Glamorgan, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to internal combustion engines of the type which may be converted from side valve engines to overhead valve engines by changing of a cylinder head.

It has been proposed to construct an internal combustion engine of the type referred to wherein the valve guides of the original side valve engine serve also to accommodate the push rods of the overhead valve engine and wherein the existing side valve ports convey the inlet and exhaust gases to the cylinder head of the overhead valve engine.

It has also been proposed to construct an internal combustion engine of the non-convertible overhead valve type wherein a pipe is provided leading from the sump to the cover enclosing the valve mechanism, through which pipe oil mist is caused to rise to lubricate the valve mechanism.

According to this invention however, we provide an internal combustion engine of the type referred to, which, when converted to an overhead valve engine, comprises valve rocker mechanism adapted to be lubricated by oil mist caused to rise through a pipe leading from a sump to a cover enclosing the said valve rocker mechanism.

Our invention will now be described, with reference to the annexed drawings, wherein:—

Fig. 1 shows an internal combustion engine in longitudinal section and

Fig. 2 shows how the engine in Fig. 1 is converted to an overhead valve engine.

The side-valve water-cooled, internal combustion engine shown in Fig. 1 has an inlet poppet valve 1 arranged at the side of the cylinder 2, the valve stem end 3 being actuated by a vertical tappet rod 4 moved at the correct instants by virtue of its running synchronously with the movement of the engine piston 5. In this engine the sparking plug 6 is arranged in the cylinder head 8 just above the inlet valve 1, the mixture for firing being introduced at the correct time by its passing to the combustion space from the inlet passage 7 beneath the valve head, communicating with the induction pipe. 9 is the valve guide and 10 the water jacket. The exhaust valve is arranged in similar manner and in close proximity to the inlet valve.

Fig. 2 shows how this engine is converted to an engine having both inlet and exhaust valves in the cylinder head. Similar parts in Figs. 1 and 2 have been numbered to agree. The new cylinder head 11 has a sparking plug 6 screwed into its side. The overhead inlet valve 1 passes through a valve guide 12 and is actuated by a rocker 13 pivotally arranged on a shaft 14 mounted in a split bearing 15, held together by studs $15^a$—$15^b$. Bearing 15 is carried by a bracket 16 fixed to the cylinder head. The rocker 13 is moved by means of a rocker rod 17 which passes through a guide 18 and is actuated from the tappet rod 4 by means of a push rod 19 having an enlarged end 20. A screwed tip 21 is provided on the end of rod 17 and is locked thereto by means of the lock nut 22. The exhaust valve is arranged similarly to the inlet valve the shaft 14 serving to support also the rocker for the same. The combustible mixture in passing to the combustion space in the engine cylinder, passes from the induction pipe through the hole 23 formerly used for receiving the head of the old side inlet valve and then following the rod 17 upwardly to the point in the cylinder head where the inlet push rod guide 18 is located, goes through a conduit 24 in the cylinder head (positioned beneath the inlet rocker bracket 16) leading to the stem side of the inlet valve 1. A similar

arrangement enables the exhaust gases to find their way from the cylinder head to the exhaust pipe through the hole formerly used for receiving the head of the old side exhaust valve.

A cover 25 is secured firmly to the cylinder head and encloses the valve rocker mechanism.

A pipe 26, leading from the sump up to and through the said cover, serves to lubricate the valve rocker mechanism. The crankcase breather is closed, and the pressure produced on descent of the pistons will cause oil mist to rise up the said pipe.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. An internal combustion engine of the type referred to, which, when converted to an overhead valve engine, comprises valve rocker mechanism adapted to be lubricated by oil mist caused to rise through a pipe leading from a sump to a cover enclosing the said valve rocker mechanism.

2. An internal combustion engine of the type referred to substantially as herein described with reference to the accompanying drawings.

Dated this 14th day of November, 1930.

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Fig. 1.

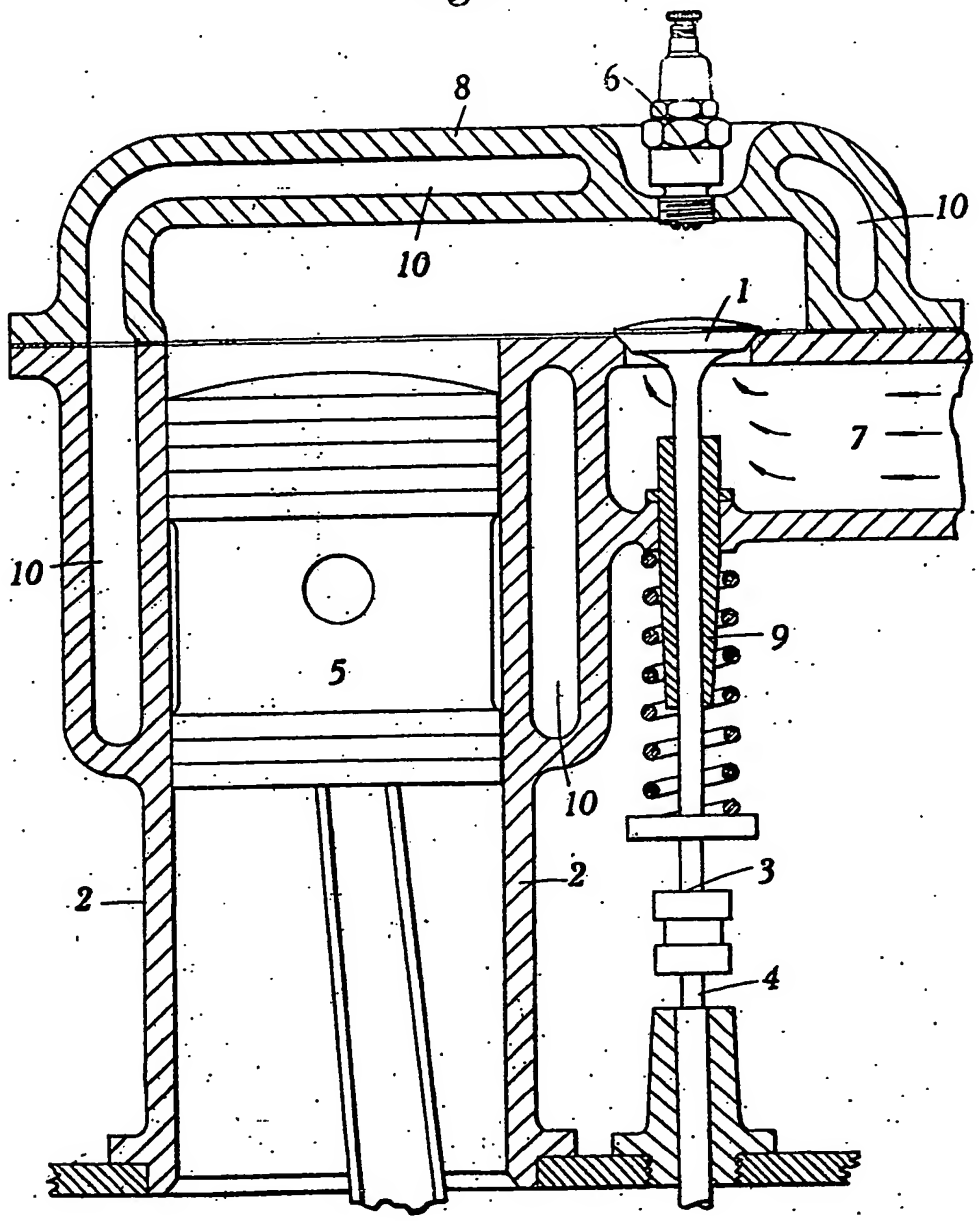
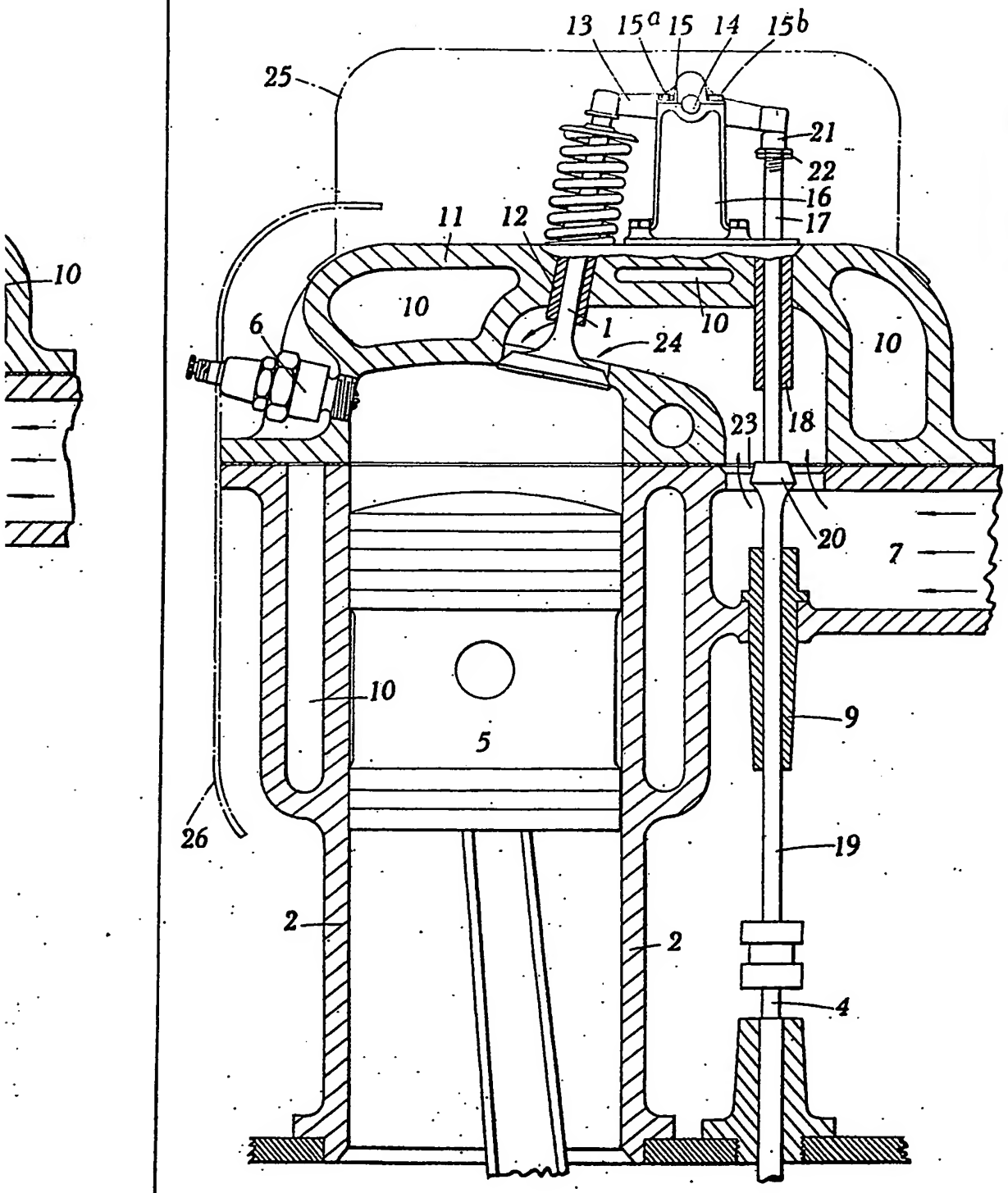



Fig. 2.

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355,365 COMPLETE SPECIFICATION

SHEET 1

2 SHEETS
SHEET 2

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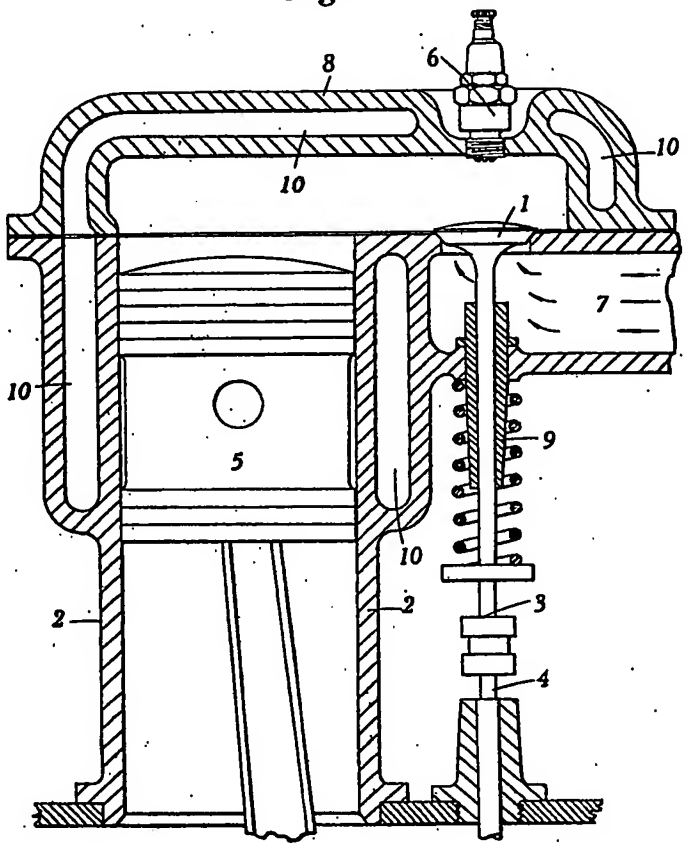
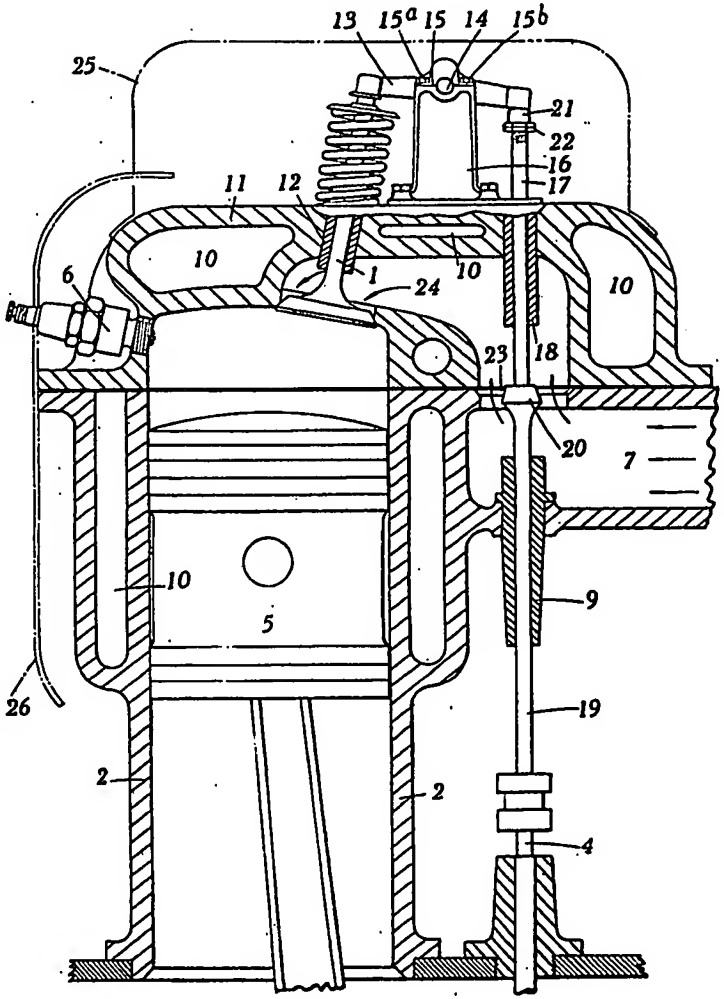



Fig. 2.

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